Chapter 10
Fixed-Wing Aircraft

This chapter provides the basic characteristics of selected fixed-wing aircraft readily available to the OPFOR. Both FM 100-60, *Armor- and Mechanized-Based Opposing Force: Organization Guide*, and FM 100-63, *Infantry-Based Opposing Force: Organization Guide*, use descriptors to indicate aircraft capabilities.

Fixed-Wing Aircraft covers the systems that will affect the planning and actions of the tactical-level ground maneuver force, and aircraft commonly employed by the OPFOR when in close proximity to enemy ground forces. Therefore, fighters, interceptors, and long-range bombers are not addressed. This chapter classifies aircraft as strike, ground-attack, and transport. Some multi-role aircraft are able to support missions across each of the categories. Therefore, they are listed in each of the above categories by their initial design, and their planned application. This chapter encompasses many aircraft which may have a dual civil/military application. It does not include, however, aircraft designed and used primarily for civil aviation.

This initial sampling of systems was selected because of their wide proliferation across numerous countries or because of their already extensive use in training scenarios. Additional data sheets addressing other widely proliferated aircraft will be sent with further supplements to this guide.

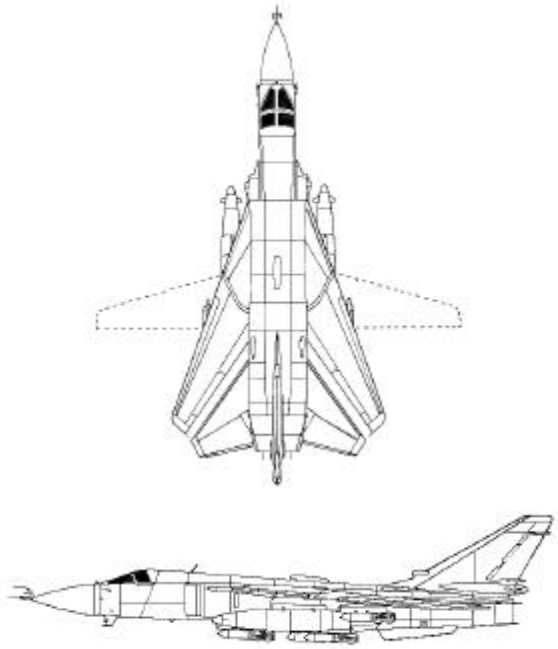
Because of the increasingly large numbers of variants of each aircraft, only the most common variants produced in significant numbers are addressed. If older versions of airplanes have been upgraded in significant quantities to the standards of newer variants, the older versions were not addressed.

The munitions available to each aircraft are mentioned, but not all may be employed at the same time. The weapon systems inherent to the airframe are listed under armament. The most probable weapon loading options are also given, but assigned mission dictates actual weapon configuration. Therefore, any combination of the available munitions may be encountered.

Questions and comments on data listed in this chapter should be addressed to:

CPT Michael Kubala
DSN: 552-7922, Commercial (913) 684-7922
e-mail address: kubalam@leav-emh1.army.mil

Russian Strike Aircraft Su-24D/FENCER



Weapon & Ammunition Types	Combat Load
23-mm 6x barrel Gsh-6-23 gun	**250**
Other Loading Options	
TN1000 or TN11200 nuclear weapons	
100-kg FAB-100 bombs	**38**
TV or laser-guided bombs	**4**
AS-7/KERRY ASM or AS-10/KAREN ASM or AS-11/KILTER ASM or AS-12/KEGLER ASM or AS-13/KINGBOLT ASM or AS-14/KEDGE ASM or AS-17/KRYPTON ASM	
Gun pods	**3**
AA-8/APHID AAM	**2**
External fuel tanks (liters)	**2,000 or 3,000**

SYSTEM

Alternative Designations: None
Date of Introduction: 1975
Proliferation: At least 11 countries

Description:
Crew: 2 (pilot, weapon systems operator)
Appearance:
- Wings: High-mount, variable, tapered back
- Engines: Both along body, under wings

Engines: 2x 17,200-shp Lyluka AL-21F-3A turbojet (24,700-shp with afterburner)
Weight (kg):
- Maximum Gross: 39,700
- Normal Takeoff: 35,910
- Empty: 22,320

Speed (km/h):
- Maximum (at altitude): 2,320
- Maximum (sea level): 1,530
- Maximum Attack Speed: 1,200
- Cruise: INA
- Takeoff/Landing Speed: INA

Max "G" Force (g): +6.5 g
Ceiling (m):
- Service (clean): 17,500
- With External Stores: INA
- Vertical Climb Rate (m/s): 150

Fuel (liters):
- Internal: 11,760
- External: 8,000

Range (km):
- Maximum Load: 940
- With Aux Fuel: 1,230
- Combat Radius: 950

Takeoff Run/Landing Roll (m):
- Prepared Surface: 1,100-1,200/950

Dimensions (m):
- Length: 24.6
- Wingspan: 17.6 extended, 10.4 swept
- Height (gear extended): 6.2

Standard Payload (kg):
- External: 8,000
- Hardpoints: 9 underwing

Survivability/Countermeasures:
Pressurized cockpit with zero/zero ejection seats, infrared and radar jammer, radar and missile warning receivers, chaff and flares.

ARMAMENT
23-mm 6x barrel gun, Gsh-6-23:
Range (m): (practical) 2,500
Elevation/Traverse: None (rigidly mounted)
Ammo Type: HEFI
Rate of Fire (rpm): 9,000

AVIONICS/SENSOR/OPTICS
The Su-24 has integrated navigation and fire control radars, pulse-doppler terrain following radar coupled to autopilot, laser/TV targeting and weapon guidance system, and laser rangefinder/ designator.

Night/Weather Capabilities:
The Su-24 is capable of attacking ground and surface targets in day, night, and poor weather conditions.

VARIANTS

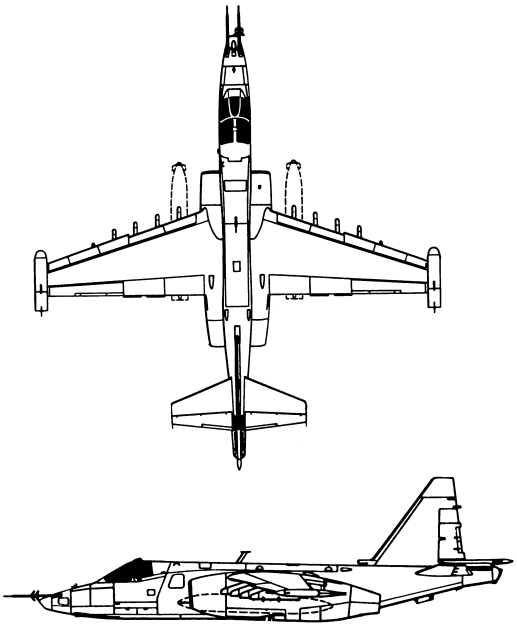
Su-24M/-24MK/FENCER D: Attack version, and export model.

Su-24MR/FENCER E: Maritime reconnaissance version with a side-looking radar, TV camera, infrared scanner, and conventional cameras, ECM suite, or ELINT pods. It has datalink to ground, and no gun.

Su-24MP/FENCER F: Another recon and electronic warfare variant.

NOTES
This aircraft was the first developed specifically as a bomber for the ground-attack role. It has a variable swept-wing, that can be set at 16, 45, or 69 degrees. Some aircraft are capable of aerial refueling, and all can carry up to three external fuel tanks for extended range. There is no internal weapons bay. Available munitions are shown above; not all may be employed at one time. Mission dictates weapons configuration. External stores are mounted on underwing hardpoints. Each wing has four points, and the center fuselage attachment point gives nine total stations.

Georgian/Russian Ground-Attack Aircraft Su-25/FROGFOOT



Weapon & Ammunition Types	Combat Load
30-mm twin barrel Gsh-30-2 gun	**250**
Other Loading Options	
AT-16 VIKhR ATGM (8 each)	**16**
23- or 30-mm GSH gun pods	**260 ea**
57-mm S-5 rocket pod (32 ea) or 80-mm S-8 rocket pod (20 ea)	**8** **8**
AS-7/KERRY ASM or AS-10/KAREN ASM or AS-14/KEDGE ASM or AS-11/KILTER ASM or AS-17/KRYPTON ASM	**8**
AA-8/APHID or AA-10/ALAMO	**2**
50-kg to 500-kg bombs	**4,000 kg**
External fuel tanks (liters)	**800/1,150**

SYSTEM

Alternative Designations: Gratch, Rook
Date of Introduction: 1980
Proliferation: At least 15 countries

Description:
Crew: 1 (pilot)
Appearance:
- Wings: High-mount, tapered back
- Engines: Both along body, under wings

Engines: 2x 4,000-shp Ryzhov (Soyuz/Tumansky) R195 Turbojet
Weight (kg):
- Maximum Gross: 17,600
- Normal Takeoff: 14,500
- Empty: 9,525

Speed (km/h):
- Maximum (at altitude): 880
- Maximum (sea level): 950
- Maximum Attack Speed: 690
- Cruise: 700
- Takeoff/Landing Speed: 220

Max "G" Force (g): +6.5 g
Ceiling (m):
- Service (clean): 7,000
- With External Stores: 5,000

Vertical Climb Rate (m/s): 72
Fuel (liters):
- Internal: 3,660
- External: 3,762

Range (km):
- Maximum Load: 500
- With Aux Fuel (2 tanks): 640
- Combat Radius: 556

Takeoff Run/LandingRoll (m):
- Prepared Surface: 550/600
- Unprepared Surface: 650/750
- Max Load: 1,200

Dimensions (m):
- Length: 15.5
- Wingspan: 14.5
- Height (gear extended): 4.8

Standard Payload (kg):
- External: 4,400 or 6,400 (Su-25T)
- Hardpoints: 10 underwing, w/500 kg ea

Survivability/Countermeasures:
Armored cockpit and engines, zero/100 km/hr ejection seat, self-sealing fuel tanks, and strengthened flight control linkages.
IFF, infrared jammer, radar warning receiver, chaff and flares.

ARMAMENT
30-mm 2x barrel gun, Gsh-30-2:
Range (m): (practical) 4,000
Elevation/Traverse: None (rigid mount)
Ammo Type: AP, HE, CC
Rate of Fire: Burst 50

AVIONICS/SENSOR/OPTICS
The targeting system incorporates a LLLTV, integrated navigation and aiming system, active bomb sight, and laser rangefinder/ designator. The aircraft uses an INS, GPS, and Doppler navigation.

Night/Weather Capabilities:
The Su-25 is fully capable of performing its direct air support mission in day, night, and poor weather conditions.

VARIANTS
Early Su-25s had 2x Soyuz/ Gavrilov R95SH engines. Most now upgraded.

Su-25A/-25K: Initial variant, and export.

Su-25B/-25UB/-25UBK/-UBP: A two-seat combat aircraft, naval version, and trainer.

Su-25T/-25TM/-25TK: Developed from the Su-25UB. Height changed to 5.2 m to hold avionics and extra fuel. All with R195 engine for increased range, ceiling, and load. Other characteristics generally similar. Upgraded targeting, acquisition, and countermeasures.

Su-39: Export variant of Su-25T.

NOTES
Available munitions are shown above; not all may be employed at one time. Mission dictates weapons configuration. External stores are mounted on underwing hardpoints. Each wing has five points for a total of ten stations. A representative mix when targeting armor formations would be 16x AT-16 ATGMs, two rocket pods, two 23-mm gun pods, 250x 30-mm rounds, and two AA-8s. The titanium cockpit is invulnerable to 20-mm cannon fire, and 30-mm fire from oblique angles. The aircraft can carry a self-contained maintenance kit in 4 underwing pods. Also the engines can operate on any type of fuel likely to be found in the forward-operating areas, including diesel and gasoline. This allows the crew to operate from unprepared airfields for extended periods of time.